

**AMENDMENTS TO THE DRAWINGS**

The attached sheets of drawings include changes as follows:

Figure 1 is modified to distinguish the labels from the shaded surfaces upon which they are placed, as requested by the Office Action.

Figure 2 is modified to include the notation "Prior Art."

Figure 3 is modified to add reference numbers 302A and 302B, as requested by the Office Action.

Figure 9 is modified to add "Y" and "N" references for decision blocks 904 and 906, as requested by the Office Action.

Figure 14 is modified to add reference arrow "1400" referring to the entire drawing, as requested by the Office Action.

Figure 16 is modified to add reference arrow "1600" referring to the entire drawing.

Attachment: Replacement sheets

## REMARKS

### I. INTRODUCTION

Claims 1-65 were pending in the application at the time the Office Action was mailed. Claims 3, 13, 14, 40, 47, 53, 61, and 62 are amended by this response. No claims are canceled by this response. Accordingly, claims 1-65 remain pending.

### II. DRAWINGS

The Office Action objects to the drawings. A response to the objections is set forth below:

(A) The Office Action indicates that lead lines are required for each reference character except for those that indicate the surface or cross section on which they are placed. Applicants respectfully request that the Examiner withdraw this objection, as the reference characters are clear as to the items to which they correspond.

(B) The Office Action indicates that reference numbers are necessary and points to 35 U.S.C. § 113. That statute requires applicants to "furnish a drawing where necessary for understanding of the subject matter sought to be patented." (35 U.S.C. § 113.) There is nothing in that statute requiring reference numbers. Applicants believe that one skilled in the art would understand Figures 3, 7B, 7C, 7D, 15, 16, 17, and 18 without additional reference numbers.

(C) The Office Action indicates that numbers, letters and reference characters should not be placed upon shaded surfaces. Applicants have amended Figure 1 to distinguish the labels from the shaded surfaces upon which they are placed.

(D) The Office Action indicates that two items in Figure 3 are labeled with reference numbers 302 and that they should be numbered differently. Applicants have

amended Figure 3 to label the two items with reference numbers 302A and 302B, respectively.

(E) The Office Action indicates that parts of Figure 4 appear to be an expanded view of parts of Figure 3 but that the relationship is unclear. Figure 4 illustrates a logical view of some components of Figure 3. The relationships can be drawn using the markings "client," "server," and "network."

(F) The Office Action indicates that identical items in Figures 3 and 4 should have the same reference numbers. As described above in paragraph (e), Figure 4 illustrates a logical view of some components of Figure 3. Accordingly, the same reference numbers are not required because the items are not necessarily identical.

(G) The Office Action indicates that the relationship of items 418, 420, and 422 of Figure 4 are not illustrated to the rest of Figure 4. These items, as described in the disclosure, represent messages that flow between the client and server via the network. One skilled in the art would understand that the messages, though sent or received by the depicted logical components, are unassociated with the components in that they travel via the network and are logically unattached to the components.

(H) The Office Action indicates that Figure 7A is an "exploded view" of item 1014 of Figure 10A. One skilled in the art would recognize that whereas Figure 7A illustrates the logical flow of a routine, item 1014 invokes the routine. Applicants respectfully submit that no correction is required.

(I) The Office Action indicates that Figure 8 appears to be a "partial exploded view" of item 422 of Figure 4. That is incorrect. Item 422 of Figure 4 is a message. Figure 8 is a routine. One skilled in the art would recognize that a message is not a routine.

(J) The Office Action indicates that the decision flow illustrated in Figure 9 is incomplete. The flow is correctly identified, and is described at paragraph [00123] of applicants' specification. Figure 9 has nevertheless been amended.

(K) The Office Action indicates that items 1014 and 1016 of Figure 10A are "condensations" of full or partial views disclosed in Figures 7A and 10B respectively. One skilled in the art would recognize that items 1014 and 1016 indicate that routines are invoked and that Figures 7A and 10B are the invoked routines. Applicants respectfully submit that no correction is required.

(L) The Office Action indicates that item 1068 does not appear in the disclosure. Item 1068 has been added to the disclosure.

(M) The Office Action indicates that item 1300 does not appear in the disclosure. Item 1300 has been added to the disclosure.

(N) The Office Action indicates that items 1407, 1409, 1411, 1412, and 1413 do not appear in the disclosure. Items 1407, 1409, 1411, 1412, 1413, and 1414 have been added to the disclosure.

(O) The Office Action indicates that 1400 does not appear in Figure 14. This error has been corrected.

(P) The Office Action indicates that Figures 16-18 are unclear. Applicants assert that one skilled in the art would understand these execution patterns. Should the Examiner need assistance in interpreting these figures, he is urged to contact the undersigned.

(Q) The following summarizes the amendments made to the drawings. Figure 1 has been amended to distinguish the labels from the shaded surfaces upon which they are placed. Figure 2 has been labeled as Prior Art. Figure 3 has been amended to add

reference numbers 302A and 302B. Figure 9 has been amended to make the logic consistent with the specification by indicating branch logic from blocks 904 and 906. Reference number 1400 has been added to Figure 14. Reference number 1600 has been added to Figure 16.

### III. SPECIFICATION

(A) The Office Action indicates that applicants are required to update the status of all parent priority applications in the first line of the specification. The specification has been amended to update the status of all related applications in the first paragraph of the specification. Accordingly, applicants respectfully request the Examiner to withdraw this objection.

(B) The Office Action indicates that the specification is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. The specification has been amended to delete the embedded hyperlink and/or other form of browser-executable code.

(C) The Office Action indicates that the logic in the decision tree disclosed in paragraphs [00123]-[00125] and Figure 9 appears to be in error. Figure 9 has been amended, and the logic in the decision tree is correct. Accordingly, applicants respectfully request that the Examiner withdraw this objection.

### IV. REJECTIONS UNDER 35 U.S.C. § 112

The Office Action rejects claim 50 under 35 U.S.C. § 112 as failing to comply with the enablement requirement. According to the Office Action, the only teaching in the specification regarding "business logic" teaches "server side" business logic. (Office Action, p. 10.) The Office Action is incorrect. Applicants' specification states: "Thus, under asynchronous invocation mode, a *client-side business logic component* may not need to wait for the DDOM client to receive a response from the server before the routine returns."

(Paragraph [00126], emphasis added). Accordingly, the rejection of claim 50 under 35 U.S.C. § 112 should be withdrawn.

The Office Action rejects claims 3, 14, 40, 47, 53, 60, and 62 under 35 U.S.C. § 112 as being indefinite for incorporating the phrase "relating to." Applicants assume that the Office Action intended claim 61 (which contains the phrase "relating to") and not claim 60 (which does not). Applicants have amended claims 3, 14, 40, 47, 53, 61, and 62 to more particularly define their inventions. The Office Action further rejects claims 6, 7, and 15-17 under 35 U.S.C. § 112 as being indefinite for incorporating the term "frame." According to the Office Action, the term "frame" is not found to be specifically defined in the specification. (Office Action, p. 11.) The Office Action is incorrect. Applicants' specification at paragraph [00138] describes a distributed document object model ("DDOM") frame. Furthermore, Figure 15 illustrates a block diagram of an embodiment of a DDOM frame. Accordingly, applicants request withdrawal of the rejections of claims 3, 6, 7, 14-17, 40, 47, 53, 61, and 62 under 35 U.S.C. § 112.

#### V. REJECTIONS UNDER 35 U.S.C. § 103(a)

Claims 1-24, 26-30, 32, 34-36, and 53-65 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,623,659 ("Shi") in view of U.S. Patent No. 6,529,905 ("Bray") and in further view of U.S. Patent No. 4,965,719 ("Shoens"). Claims 25, 31, 33, and 37-52 are rejected under 35 U.S.C. § 103(a) as unpatentable over Shi in view of Bray and in further view of Shoens and in further view of U.S. Patent No. 5,390,316 ("Cramer"). Applicants respectfully traverse these rejections.

Shi describes "a locking method and system for a versioned object." (Shi, 1:10-11.) Shi's locking method and system enables multiple users to concurrently access and edit versioned objects, such as source code documents. (See Shi, 8:1-15.) In Shi's technology, a user can check out a versioned object, update the versioned object, and then check it in.

Bray describes "various embodiments of a method of locking elements in a hierarchical data structure and a structured authoring system including same." (Bray, 3:66-4:2.) Bray's structured authoring system has a locking scheme that enables a user to place an edit lock on a node in the hierarchical data structure. The locking scheme prevents other users from editing that same node, until the first user has released the edit lock. (See Bray, 4:53-5:3.)

Shoens describes a method for managing access to shared data resources in a computing system. (Shoens, 1:9-16.) In Shoens' technology, multiple users requiring access to a shared data resource are required to request either read or update locks on the resource. Multiple users can have read access to the same data resource at the same time even though the data resource may be in the process of being updated by one of the users. However, only those users that hold an update lock on the data resource can update it. (See Shoens, 3:4-34.)

Cramer describes "multicomputer environment which is loosely coupled by means of a shared memory unit." (Cramer, 1:22-24.) In Cramer's technology, the computer systems do not share memory amongst themselves except for an external data set to which all of the computer systems have access. (Cramer, 4:13-17.) Cramer further describes that the computers transmit and receive messages using a peer-to-peer communication protocol. (Cramer, 2:2-15.)

In some embodiments, applicants' technology uses a DDOM system that enables multiple authors using different computing systems to author portions or all of a hierarchical document. These authors may work on the same or different portions of the document simultaneously or at different times. In one scenario of use, an author opens a document on a client computer for editing. The client computer ("client") requests the document from a server computer ("server"). The server, upon determining that the requested document has not already been opened, opens the document by, e.g., loading it from storage or requesting a system to create the document. The server then sends a

copy or subset of the document to the client. The client is then said to be "subscribed" to the document. The user of the client is able to view the document's contents and make modifications, or mutations, to the document. These mutations are then propagated to the server for application to the server's document. When additional users open the same document, the server sends a copy of the document, as it presently exists on the server, to the client of each new user. Any further mutations made by any user may then be propagated from the user's client to the server, and then broadcast from the server to the other clients. In this way, one master version of the document can be maintained by the server, the copy of each client is updated as mutations are made, and the users can see the mutations broadcast by the server. This results in a synchronized view of the document for all users.

The Office Action characterizes claim 1 as specifying a standard revision protocol of "checking out" all or part of a document or code, and attempting to "check in" the revised document or code. (Office Action, p. 16.) The Office Action is incorrect in its characterization of claim 1. Claim 1 recites:

- receiving an indication of a requested mutation from a user;
- sending a message to the server computing device containing the requested mutation;
- when the requested mutation is successfully applied by the server computing device to the hierarchical document, receiving a message from the server computing device acknowledging a successful mutation to the hierarchical document; and
- when the requested mutation is not successfully applied by the server computing device to the hierarchical document, receiving a message from the server computing device containing an indication to revert the local copy of the hierarchical document to a current form of the hierarchical document on the server computing device.

Applicants' technology enables a user to request a mutation to a hierarchical document, send the mutation request to the server, and receive an indication of either a successful



application of the mutation to the server's version of the hierarchical document or an indication to revert the user's version of the hierarchical document to the server's version of the hierarchical document. Applicants' technology thus enables all users to have a synchronized view of the hierarchical document.

Shi, Bray and Shoens, alone or in combination, do not disclose or suggest sending and receiving messages regarding mutations to hierarchical documents. Shi describes that when a user has finished updating a source code document or a part thereof, the user checks in the document or document part. (See Shi, 6:19-20.) In other words, the entirety of what the user had checked out is checked in, and the document or document part is no longer available for editing by the user. In contrast, applicants' technology enables a user's client to send a message regarding a mutation to a server and still retain the document for purposes of viewing and editing it. Thus Shi's "checking out" and "checking in" does not correspond to sending to a server a mutation request to be applied to a hierarchical document. Bray describes clients that communicate with a locking manager to lock nodes in a hierarchical document for editing. (Bray, 6:60-65, claim 1.) This too does not correspond to sending and receiving messages regarding mutations to hierarchical documents, because communications for locking purposes are not analogous to communications regarding mutation requests. According to the Office Action, Shoens teaches that it was known at the time of the invention to send messages indicating changes to a document or code. (Office Action, p. 17.) The Office Action is incorrect. In fact, Shoens describes that a process or user updating records in a block from a Direct Access Storage Device ("DASD") has to notify other holders of the same block before the process or user can commit the update. (Shoens, 1:65-2:15.) However, Shoens' records in a block from a DASD are certainly not analogous to a document, let alone a hierarchical document, and therefore what Shoens describes does not correspond to sending and receiving messages regarding mutations to hierarchical documents. Furthermore, as noted in the Office Action, "Shoens does not expressly teach that the requesting user is notified of a successful or failed revision." (Office Action, p. 17.) Because Shi, Bray and

Shoens, alone or in combination, do not disclose or suggest the above features of claim 1, claim 1 is patentable over Shi, Bray and Shoens.

Claim 1 further recites "when the requested mutation is not successfully applied by the server computing device to the hierarchical document, receiving a message from the server computing device containing an indication to revert the local copy of the hierarchical document to a current form of the hierarchical document on the server computing device." In applicants' technology, if a mutation to a hierarchical document made by a client cannot be applied on a server, the server may instruct the client to roll back the mutation. This may occur, for example, if another client has made a conflicting mutation to the same portion of the hierarchical document. Shi does not disclose or suggest this feature. Although Shi enables multiple users to have concurrent access to a document, Shi's locking scheme is directed to avoiding conflicts by only allowing one user to check out a specific portion of the document. (Shi, 5:48:62.) Similarly, Bray's locking scheme allows only a single user to lock and edit a specific node. (Bray, 4:53-5:3.) As discussed above, Shoens does not disclose or suggest editing a document. Because Shi, Bray, and Shoens, alone or in combination, do not disclose or suggest the above features of claim 1, claim 1 is patentable over Shi, Bray, and Shoens.

Independent claims 13, 26, 30, and 53 recite similar features, and are therefore patentable over Shi, Bray, and Shoens for the reasons described above. Claim 13 recites "a component that sends to the server computing device a message containing the requested mutation; and a component that receives from the server computing device a message indicating whether the requested mutation was successfully applied to the hierarchical document." Claim 26 recites "when the mutation cannot be applied to the hierarchical document, sending to the client computing device a message containing an indication to revert the client copy of the hierarchical document to a current form of the hierarchical document; and when the mutation can be applied to the hierarchical document, sending to the client computing device a message containing an indication of an applied mutation." Claim 30 recites " sending to the client computer system from which

the request was received a response message containing an answer; and sending to a connected client computer system other than the client computer system from which the mutation request was received a broadcast message." Claim 53 now recites "a component that receives a message corresponding to a mutation request from the client computing device, determines whether the mutation request can be applied to the hierarchical document, applies the mutation to the hierarchical document, and sends an indication message of an applied mutation to the client computing device."

Independent claim 37 recites:

retrieving the hierarchical document from another computing device;  
modifying the retrieved hierarchical document;  
sending an indication of the modification to the other computing device;  
and  
when the sent modification cannot be applied to the hierarchical document on the other computing device, reverting the hierarchical document to a current form of the hierarchical document on the other computing device.

As discussed with respect to claim 1, above, Shi, Bray, or Shoens, alone or in combination, do not disclose or suggest sending and receiving messages or indications regarding mutations or modifications to hierarchical documents. According to the Office Action, Cramer teaches a multi-user document or code revision environment wherein the hierarchical document and messages for document or code modification are exchanged in a peer-to-peer environment. (Office Action, p. 42.) The Office Action is incorrect. First, Cramer does not disclose or suggest a multi-user environment for document editing. Rather, Cramer describes a multiple-computer environment in which the computers share an external data set, or memory. (Cramer, 4:13-17.) Second, Cramer does not disclose or suggest messaging regarding document modifications. Rather, Cramer describes four types of messages: 1) a conventional text message; 2) an instruction to perform a specified function; 3) a delete operator message; and 4) updates to existing messages.

(Cramer, 6:13-34.) None of Cramer's messages correspond to indications of modifications of hierarchical documents. Because Shi, Bray, Shoens, and Cramer, alone or in combination, do not disclose or suggest the above features of claim 37, claim 37 is patentable over Shi, Bray, Shoens, and Cramer.

## VI. CONCLUSION

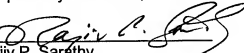
The independent claims each recite a novel combination of elements that is neither taught nor suggested by the applied references and so cannot be rejected under 35 U.S.C. §§ 102(b), 102(e) or 103(a). Because the dependent claims import the limitations from the claims on which they depend, they also cannot be rejected under 35 U.S.C. §§ 102(b), 102(e) or 103(a).

In view of the foregoing, applicants believe the pending application is in condition for allowance.

Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 50-0665, under Order No. 612188002US from which the undersigned is authorized to draw.

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Respectfully submitted,

By   
Rajiv P. Sarathy  
Registration No.: 55,592  
PERKINS COIE LLP  
P.O. Box 1247  
Seattle, Washington 98111-1247  
(206) 359-8000  
(206) 359-7198 (Fax)  
Attorney for Applicants

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**APPENDIX**